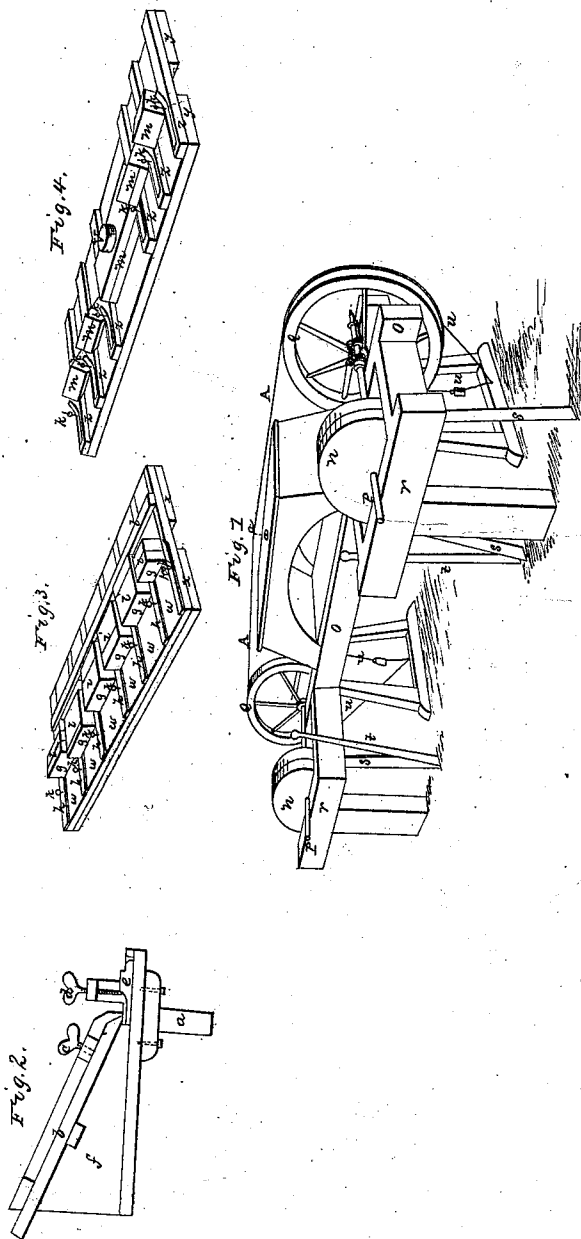


*A. Wilkinson,  
Polishing Wire.*

*Patented Aug. 31, 1836.*



# UNITED STATES PATENT OFFICE.

ARNOLD WILKINSON, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR POLISHING IRON AND BRASS WIRE FOR METALLIC WEAVERS' REEDS.

Specification of Letters Patent No. 14, dated August 31, 1836.

*To all whom it may concern:*

Be it known and remembered that I, ARNOLD WILKINSON, of Providence, in the county of Providence and State of Rhode Island, reed maker, have invented a new and useful Improvement in Machines or Apparatus used for Polishing Iron and Brass Wire for Metallic Reeds, which may be thus specified and described.

The bench in common use is shown in Figure 1, in the drawings hereto annexed, and also a part of my improvement attached to it. That which is in common use is thus described. The frame O, O, is eight feet long, eight inches wide in the clear, and two feet eight inches high. It is made of hard pine, or ash scantling six inches by two, and three fourth inches thick. Between the two wheels Q, Q, and bench A, A, there are two girts bolted to the two side pieces to keep the frame together. There are four legs to the frame fastened on with joint bolts, and at the bottom of the legs is a piece of scantling framed into them to keep the frame steady. The bench A, A, is two feet eight inches long and fourteen inches wide, and upon this are all the operations performed in polishing wire.

A, is a piece of cast iron six inches in diameter, and half an inch thick with a neck projecting through the bench three inches long, with a hole through it one and a half inches in diameter to receive the cylinder, or pin on the bottom of the other parts of the apparatus as they are successively placed on the bench to be used to keep them steady. The wheels Q, Q, are thirty one inches in diameter, the rims are made of wood, cherry or birch will answer, a two and a half inches thick, and four and three fourth inches wide, two scores are turned out in each rim, one for the wire three inches wide, and three fourths of an inch deep, the other for the friction band half an inch deep and one fourth of an inch wide. The friction bands and weights are represented by u, u, u, the object of the friction band is to keep the discharging wheel from overrunning, when the receiving wheel is stopped, and keep the wire tight in going through the several operations in polishing. The spokes, and hubs of these wheels are cast iron, the arbors passing through the hubs are each twenty two inches long, and one inch in diameter. On the arbor, and spokes of each wheel there is a motion called the

sun, and planet motion which causes each wheel to vibrate when acting as the receiving wheels, so as to spread the wire on the rim. These parts are in common use, those that follow I claim as my invention. v, v, are two frames each twenty two inches wide in the clear, by fifteen inches in the clear, made of the same sized scantling as the frame O, O, and bolted to that frame on one side so that the middle of one of them is opposite to the center of one of the wheels Q, Q, and the middle of the other opposite the center of the other. The arbor P, P, and pulleys u, u, tight, and loose pulleys, set on these frames v, v, as shown in the drawing, the arbors are coupled to the arbors of the wheel Q, Q, to operate the machine the belt S, S, S, are slid on the pulleys u, u, by the levers t, t, alternately as the wire has passed from one wheel to the other. The wheel which is the receiving wheel for the time being always has the belt on the tight pulley, and the wheel which is the discharging wheel for the time being turns the same way with the other, with its belt on the loose pulley. The object of this improvement is to operate the machinery by power instead of hand.

Fig. 2 represents the gouge, and frame that holds it. a, is a cylinder, or pin one and a half inch in diameter and three inches long with a flat top five and a half inches in diameter, and half an inch thick which is fastened to the underside of the bottom of the gouge frame is two inches wide half an inch thick, and nine inches long. The side f, is triangular as shown in the drawing, and stands on one edge of the bottom. Both are of cast iron, cast in a single piece, b, is the gouge, made of steel held on the side in a position corresponding with its upper edge, between these projections cast on the face of the side, two of these projections are in a line, and the third so far below the line that the gouge rests upon it under the others, through the projection near the point of the gouge is a screw C, which presses the point of the gouge upon the wire. The gouge is a little longer than the side of the frame, and half an inch square more or less. Along its underside is a groove cut in it of the size and shape required in the wire the lower end is ground off beveling to an edge, C, is the gouge block, this made of some hard metal, and is fastened to the upper surface of the bottom of the gouge frame. A

shallow groove is cut in the upper surface of this block through which the wire passes under the screw *a*, before it reaches the gouge, the groove is about the width of the wire, the screw *d* passes through a stand and arm on the bottom of the gouge frame, the part of the gouge block over which the wire passes after going under this screw is a raised lip formed by cutting away the sides of the gouge block, the top, and sides of which are on lines with the bottom, and sides of the preceding groove, the groove in the under surface of the gouge sets over this lip, and the wire passes along on the lip under the edge of the gouge. When the gouge is to be used the cylinder or pin A, in Fig. 2, is placed in *a*, in Fig. 1, on the bench A, A, the wire from the discharging, is drawn by the receiving wheel, along the groove in the gouge block, C, under the screw *d*, along on the lip of the gouge block, under the edge of the gouge *b*, into the receiving wheel, motion being given to that wheel by the belt. The wire passes repeatedly from wheel to wheel under the edge of the gouge, until the proper shape is given to it. This labor was formerly performed by hand, the workman holding an instrument answering the purpose of the gouge, or a piece of lead for the gouge block.

Fig. 3, represents the filing apparatus, X, X, are the bed pieces of the frame each of which is five inches wide and thirty-two inches long, and one inch thick, they are placed one and a half inches apart side by side; seven bars are placed across the bed pieces, four inches apart, and screwed to the bed pieces, these are one inch broad, three fourths of an inch thick, the spring guides *h*, *h*, *h*, *h*, *h*, *h*, are fastened to these bars, their object is to hold the wire in its proper place. *w*, *w*, *w*, *w*, *w*, *w*, are blocks of wood five inches long, four inches wide, and one inch thick, these are screwed on one of the bed pieces, between the bars *g*, *g*, *g*, *g*, *g*, *g*, are pieces of wood four inches long, and one and a half inches thick which are fastened to the blocks *w*, *w*, *w*, *w*, *w*, *w*, other blocks similar in shape, and size to the blocks *w*, *w*, *w*, *w*, *w*, *w*, are placed on the other bed pieces, and between the bars, these are not fastened to the bed piece, but may be moved back and forward toward *w*, *w*, *w*, *w*, *w*, *w*, being kept in their places between the bars by the bar 1, which extends across them in a line with the bed piece being fastened to the other bars on the ends of these last named blocks nearest *g*, *g*, *g*, *g*, *g*, *g*, are other blocks fastened similar to *g*, *g*, *g*, *g*, *g*, *g*, the faces or sides of the blocks *g*, *g*, *g*, *g*, *g*, *g*, and the blocks described as similar to them are cut at different angles so as to fit against each other, and at the same time to bear upon the sides, edges, and corners of the wire as it passes between them. Upon

these faces or sides common float files the length of the blocks are fastened, and the blocks themselves are held against each other by a spiral spring, *i*, on each pair one end of each is fastened to one and the other end when in use hooks onto a pin, on the other block *h*, *h*, *h*, *h*, *h*, *h*, are spring guides, one of these lies lengthwise on each of the bars, the outer end being fastened thereto. They are each in two pieces which lie one on the other, the upper piece is fastened to the lower at its outer end, and the inner ends are over one another, the lower part is six inches long, three-fourths of an inch wide, and one-sixteenth of an inch thick, the upper part is of the same width, and thickness, but only three-fourths of an inch long, the wire is held between these two parts of each spring. Each spring is raised, and lowered at pleasure by the adjusting screws *k*, *k*, *k*, *k*, *k*, *k*.

In using this part of the apparatus it is placed upon the bench A, A, Fig. 1. The wire from the discharging wheel is passed between the two parts of each of the springs *h*, *h*, *h*, *h*, *h*, *h*, and between the files, the spiral springs on the blocks *g*, *g*, *g*, *g*, *g*, *g*, are fastened on the pins, the receiving wheel being then put in motion the wire in passing from the one wheel to the other is acted upon by the files on its sides, edges, and corners by one and the same operation, this continued until the wire is prepared for the emery blocks.

Fig. 4, represents the emery blocks, to finish the wire for use. The frame which holds these blocks, is similar to the one which holds the file blocks last described. The bed pieces Y, Y, are of same width, length, and thickness, the bars *z*, *z*, *z*, *z*, *z*, *z*, six in number are placed six inches apart, a wider space being left between the two middle bars, spring guides, similar to the spring guides *h*, *h*, *h*, *h*, *h*, *h*, in Fig. 3, are placed on the bars for the same use. Between each pair of the bars are placed two blocks *m*, *m*, *m*, *m*, *m*, *m*, of white-pine reaching from bar to bar, two inches wide, and three-fourths of an inch thick, each pair of these blocks are held together by a pair of hinges at the back which allows them to be opened and shut on the wire, when closed they are prevented from opening by spiral springs similar to those used on the file blocks in Fig. 3. The faces or sides of these blocks where they come together are covered with emery glued on. Upon the middle pair of these blocks is placed a weight V. These blocks are not fastened to the bed pieces or bars, but are removable at pleasure. In using this part of the apparatus, the frame is placed on the bench A, A, Fig. 1. The wire from the discharging wheel is passed between the two parts of the springs represented in Fig. 3, by *h*, *h*, *h*, *h*, *h*, *h*, and between each pair

of the blocks, *m, m, m, m, m*, which are open for the purpose of receiving it. The blocks are then shut on the wire and held together by the spiral springs, and the weight *V*, and  
5 being adjusted so as to bear upon the sides, edges, and corners of the wire, the receiving wheel is put in motion, and the wire is passing repeatedly from one wheel to the other, is polished, and filled for use, this operation  
10 was heretofore performed by hand, the workman repeatedly drawing the wire through sand-paper held in his hand.

I claim as my invention—

1. That part of Fig. 1, before specifically  
15 mentioned as my invention, by which the whole apparatus may in turn be operated by

water, steam, or horse power. All that is represented in Fig. 2, excepting its manner of being connected with Fig. 1.

2. And also I claim all that is represented 20 in Fig. 3 and Fig. 4. The same result can probably be attained by apparatus made in the form aforespecified, but of different materials; or by variations in the sizes, and shapes of the different parts. The materials, 25 and sizes which I have given, I have found by experience to be sufficient for the purpose.

ARNOLD WILKINSON.

Witnesses:

WILLIAM H. STAPLES,  
JOHN B. SNOW.